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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/966,294	09/27/2001	Oleg D. Lavrentovich	KSU.P202	5056
26360	7590	09/09/2004	EXAMINER	
RENNER, KENNER, GREIVE, BOBAK, TAYLOR & WEBER FIRST NATIONAL TOWER FOURTH FLOOR 106 S. MAIN STREET AKRON, OH 44308			SEFER, AHMED N	
			ART UNIT	PAPER NUMBER
			2826	

DATE MAILED: 09/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/966,294

Applicant(s)

LAVRETOVICH ET AL.

Examiner

A. Sefer

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 June 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 11-23 is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The amendment filed on June 22, 2004 has been entered; no claims have been introduced.

Response to Arguments

2. Applicant's arguments filed June 22, 2004 have been fully considered but they are not persuasive.

3. The applicants argue that the references of record do not disclose the device structure as recited in the claims. Specifically, applicants argue that the prior art fails to teach or fairly suggest that the micro structures are formed by causing the liquid crystal material to assume a predetermined orientation with non-uniform spatially distorted director and thereafter polymerizing the prepolymer to form with defined microstructures.

4. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., that the micro structures are formed by causing the liquid crystal material to assume a predetermined orientation with non-uniform spatially distorted director and thereafter polymerizing the prepolymer to form with defined microstructures) are not recited in the rejected claim(s).

Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-4, 9 and 10 are rejected under 35 U.S.C. 102(a) as being anticipated by Kumar et al. (“Kumar”) (WO 00/49452).

Kumar discloses in figs. 1-11 a liquid crystal device comprising a pair of opposed substrates 82 having a gap therebetween; a liquid crystal material 54 disposed in said gap; and a polymer micro-structures 58 formed between said substrates, wherein the micro-structures are formed by polymerizing a prepolymer, and wherein the micro-structures affixed to said at least one of the substrate (as in claim 2) have a shape and spatial location determined by the director field of said liquid crystal material.

As for claims 3 and 4, Kumar discloses an alignment layer 28 or a polymer layer (as in claim 4) disposed on at least one of said substrate.

As for claims 9 and 10, Kumar discloses (see pages 7 and 8, lines 28-32 and 3-15) a smectic liquid crystal material and UV-curable prepolymer (as in claim 10).

7. Claims 1-4, 9 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Hsu USPN 6,203,723.

Hsu discloses in figs. 1-4 a liquid crystal device comprising a pair of opposed substrates having a gap therebetween; a liquid crystal material 2 disposed in said gap; and a polymer micro-structures 9 formed between said substrates, wherein the micro-structures are formed by polymerizing a prepolymer, and wherein the micro-structures have a shape and spatial location determined by the director field of said liquid crystal material.

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As for claims 9 and 10, Hsu discloses (see abstract and col. 1, lines 34-60) a smectic liquid crystal material and UV-curable prepolymer (as in claim 10).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 5, 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hsu in view of Scherer et al. ("Scherer") 6,208,398.

Hsu discloses the device structure as recited in the claim, but does not disclose a homogenous planar geometry produced by an alignment.

Scherer discloses (see figs. 1-4 and abstract) a liquid crystal device comprising a pair of opposed substrates having a gap therebetween; a liquid crystal material 66 disposed in said gap; and alignment layer 95 disposed on at least one of said substrate, wherein said alignment layer produces homogenous planar geometry of the director field or homeotropic geometry of the director field (as in claim 7) or a patterned geometry of the director field with different alignment properties at different regions of the cell (as in claim 8).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate Scherer's teachings with Hsu's device since that would provide a smart pixel arrays.

10. Claims 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hsu in view of Acosta et al. ("Acosta") USPN 6,512,569.

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Hsu discloses the device structure as recited in the claim, but does not disclose a homogenous planar geometry produced by an alignment.

Acosta discloses in figs. 4-8 a liquid crystal device comprising a pair of opposed substrates having a gap therebetween; a liquid crystal material 3 disposed in said gap; and alignment layer 2/2' disposed on at least one of said substrate, wherein said alignment layer produces homogenous planar geometry of the director field or a homogenous tilted geometry of the director field (as in claim 6) or homeotropic geometry of the director field (as in claim 7) or a patterned geometry of the director field with different alignment properties at different regions of the cell (as in claim 8).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate Acosta's teachings with Hsu's device since that would provide a smart pixel arrays.

11. Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hsu in view of Molsen et al. ("Molsen") (UK 2 329 481).

Hsu discloses the device structure as recited in the claim, but does not disclose a homogenous planar geometry produced by an alignment.

Molsen discloses (see figs. 7 and 8) a liquid crystal device comprising a pair of opposed substrates 12/13 having a gap therebetween; a liquid crystal material disposed in said gap; and alignment layer 16/17 disposed on at least one of said substrate, wherein said alignment layer produces homogenous planar geometry of the director field or a homogenous tilted geometry of the director field (as in claim 6) or homeotropic geometry of the director field (as in claim 7).

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Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate Molsen's teachings with Hsu's device since that would eliminate irreproducible characteristics as taught by Molsen.

Allowable Subject Matter

12. Claims 11-23 are allowed.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to A. Sefer whose telephone number is (571) 272-1921.

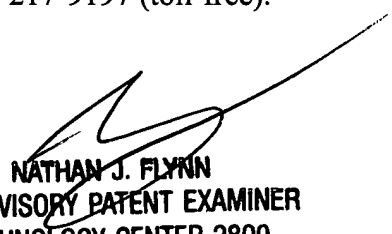
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (571) 272-1915.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ANS

September 7, 2004



NATHAN J. FLYNN
SUPERVISORY PATENT EXAMINER
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